WHAT IS CLAIMED IS:

1. A semiconductor pressure sensor comprising:

a semiconductor substrate having a diaphragm for receiving pressure and a bridge circuit for detecting distortion of the diaphragm corresponding to the pressure,

wherein the bridge circuit includes a pair of first gauge resistors and a pair of second gauge resistors,

wherein the first gauge resistors are disposed on a center of the diaphragm, and the second gauge resistors are disposed on a periphery of the diaphragm, and

wherein each first gauge resistor has a first resistance, which is larger than a second resistance of each second gauge resistor.

2. The sensor according to claim 1,

wherein the bridge circuit has a predetermined ratio of resistance between the second resistance and the first resistance,

wherein the diaphragm has another predetermined ratio of thermal stress between a second thermal stress to be applied to the second gauge resistor and a first thermal stress to be applied to the first gauge resistor in a case where a thermal stress is applied to the substrate, and

wherein the predetermined ratio of resistance is equal to the predetermined ratio of thermal stress.

3. The sensor according to claim 2,

wherein both of the thermal stresses to be applied to the first

gauge resistor and the second gauge resistor are determined with using a finite element method so that the predetermined ratio of thermal stress is obtained.

4. The sensor according to claim 2,

wherein the first gauge resistors and the second gauge resistors are connected together in series so that the bridge circuit provides a wheatstone bridge,

wherein each second gauge resistor further includes a third gauge resistor having a third resistance and disposed on the periphery of the diaphragm,

wherein the second and third gauge resistors are integrally connected in series so that the second and third gauge resistors provide one gauge resistor, and

wherein the first resistance is equal to a total resistance of the second and third resistances.

5. The sensor according to claim 4,

wherein the semiconductor substrate is made of single crystal silicon having a principal plane of a (110) crystal plane,

wherein the first gauge resistor has a longitudinal direction along with a <110> crystal axis of the single crystal silicon,

wherein the second gauge resistor has a longitudinal direction along with the <110> crystal axis of the single crystal silicon, and

wherein the third gauge resistor has a longitudinal direction along with a <100> crystal axis of the single crystal silicon.

6. The sensor according to claim 5,

wherein each gauge resistor has a folded structure of a wire resistor so that the wire resistor is parallel to the <110> crystal axis or the <100> crystal axis, and

wherein the diaphragm has an octagonal shape having a pair of sides along with the <110> crystal axis, a pair of sides along with the <100> crystal axis, and four sides for connecting between the side along with the <110> crystal axis and the side along with the <100> crystal axis.

7. The sensor according to claim 6,

wherein the diaphragm has a length of 450μm and a width of 450μm, and

wherein the predetermined ratio of resistance is 0.7.

8. The sensor according to claim 1, further comprising:

a concavity disposed in the substrate so as to provide the diaphragm; and

a glass base disposed on the substrate,

wherein the substrate includes a first surface and a second surface,

wherein the gauge resistors are disposed on the first surface of the substrate, and

wherein the glass base is attached to the second surface of the substrate so as to provide a chamber between the glass base and the concavity.

9. The sensor according to claim 8,

wherein the chamber is sealed so that the sensor provides an absolute pressure sensor, and

wherein the gauge resistors are strain gauge resistors made of diffused resistor.

10. The sensor according to claim 9,

wherein the bridge circuit has a predetermined ratio of resistance between the second resistance and the first resistance,

wherein the diaphragm has another predetermined ratio of thermal stress between a second thermal stress to be applied to the second gauge resistor and a first thermal stress to be applied to the first gauge resistor in a case where a thermal stress is applied to the substrate, and

wherein the predetermined ratio of resistance is equal to the predetermined ratio of thermal stress so that a temperature nonlinearity offset property of the sensor is improved.

11. The sensor according to claim 10,

wherein the first gauge resistors and the second gauge resistors are connected together in series so that the bridge circuit provides a wheatstone bridge,

wherein each second gauge resistor further includes a third gauge resistor having a third resistance and disposed on the periphery of the diaphragm,

wherein the second and third gauge resistors are integrally connected in series so that the second and third gauge resistors

provide one gauge resistor, and

wherein the first resistance is equal to a total resistance of the second and third resistances.

12. The sensor according to claim 11,

wherein the semiconductor substrate is made of single crystal silicon having a principal plane of a (110) crystal plane,

wherein the first gauge resistor has a longitudinal direction along with a <110> crystal axis of the single crystal silicon,

wherein the second gauge resistor has a longitudinal direction along with the <110> crystal axis of the single crystal silicon, and

wherein the third gauge resistor has a longitudinal direction along with a <100> crystal axis of the single crystal silicon.

13. The sensor according to claim 12,

wherein each gauge resistor has a folded structure of a wire resistor so that the wire resistor is parallel to the <110> crystal axis or the <100> crystal axis, and

wherein the diaphragm has an octagonal shape having a pair of sides along with the <110> crystal axis, a pair of sides along with the <100> crystal axis, and four sides for connecting between the side along with the <110> crystal axis and the side along with the <100> crystal axis.